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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/588,286	07/09/2007	Yasumasa Dekishima	P30416	6444
7055 7590 10/07/2009 GREENBLUM & BERNSTEIN, P.L.C. 1950 ROLAND CLARKE PLACE RESTON, VA 20191				
EXAMINER JOKE, MICHELE K				
ART UNIT		PAPER NUMBER		
1636				
NOTIFICATION DATE		DELIVERY MODE		
10/07/2009		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

gbpatent@gbpatent.com  
pto@gbpatent.com

### Office Action Summary

**Application No.**

10/588,286

**Applicant(s)**

DEKISHIMA ET AL.

**Examiner**

MICHELE K. JOIKE

**Art Unit**

1636

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-19 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Election/Restrictions*

Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-6, 16, drawn to a method of producing (S)-2-pentanol or (S)-2-hexanol.

Group II, claim(s) 7, drawn to a method of producing (R)- or (S)-3-methyl carboxylic acid.

Group III, claim(s) 8, drawn to a method for producing (R)- or (S)-1-methylalkyl malonic acid.

Group IV, claim(s) 9-10, drawn to (R)- or (S)-1-methylalkyl malonic acid.

Group V, claim(s) 11, 13, drawn to a method for producing an optically active substance represented by formula 6.

Group VI, claim(s) 12, 17, drawn to a method for producing an optically active substance represented by formula 6.

Group VII, claim(s) 14, drawn to a method for producing (R)-1-methylbutyl malonic acid or (R)-1-methylpentyl malonic acid.

Group VIII, claim(s) 15, drawn to a method of producing (R)-3-methyl hexanoic acid or (R)-3-methyl heptanoic acid.

Group IX, claim(s) 18, drawn to a method for producing (R)-1-methylbutyl malonic acid or (R)-1-methylpentyl malonic acid, using formula 9.

Group X, claim(s) 19, drawn to a method of producing (R)-3-methyl hexanoic acid or (R)-3-methyl heptanoic acid using formula 9.

The inventions listed as Groups I-X do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

The special technical feature of Group I concerns (S)-2-pentanol or (S)-2-hexanol produced by microorganisms. The special technical feature of Group II concerns production of (R)- or (S)-3-methyl carboxylic acid. The special technical feature of Group III concerns the method of producing of (R)- or (S)-1-methylalkyl malonic acid. The special technical feature of Group IV concerns the substance (R)- or (S)-1-methylalkyl malonic acid. The special technical feature of Group V concerns an optically active substance represented by formula 6 to produce (S)-2-pentanol. The special technical feature of Group VI concerns an optically active substance represented by formula 6 to produce (S)-2-hexanol. The special technical feature of Group VII concerns production of (R)-1-methylbutyl malonic acid or (R)-1-methylpentyl malonic acid. The special technical feature of Group VIII concerns production of (R)-3-methyl hexanoic acid or (R)-3-methyl heptanoic acid. The special technical feature of Group IX concerns production of (R)-1-methylbutyl malonic acid or (R)-1-methylpentyl malonic acid, using formula 9. Group X concerns production of (R)-3-methyl hexanoic acid or (R)-3-methyl heptanoic acid using formula 9. Therefore, there appears to be no special technical feature linking all of the claims. Furthermore, Xie et al (IDS reference) describes a process for producing (S)-2-hexanol with an optical purity of 100% e.e. by reducing 2-hexanol using (S)-specific secondary alcohol dehydrogenase that has been

purified from *Nocardia fusca* that were not pretreated with a solvent (page 1721, Abstract; page 1722, left column, lines 1-54; page 1724, right column, last line to page 1725, left column, line 5; Fig. 5). In addition, document 2 states that the  $V_{max}$  of the reduction reaction of 2-hexanone catalyzed by this (S)-specific secondary alcohol dehydrogenase is 260  $\mu\text{mol}/\text{min}/\text{mg}$ , and 0.45 mg of purified enzyme can be obtained from 30 g of bacterial cell mass (Table 1). Because the (S)-specific secondary alcohol dehydrogenase described in document 1 catalyzes a ketone reduction reaction, it corresponds to the "carbonyl reducing enzyme" of the invention described in claim 2 of this application. In addition, this authority finds that when the productivity of 2-hexanol described in document 1 is calculated by the above numerical values, it becomes approximately 24 mg (S)-2-hexanol/gram of bacterial cell mass/hour, and the productivity per gram of dry bacterial cell mass is 1 mg (S)-2-hexanol/gram of bacterial cell mass/hour or higher. Therefore, Xie et al discloses the invention described in claim 2.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and the product claims are subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHELE K. JOIKE whose telephone number is (571)272-5915. The examiner can normally be reached on M-F, 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Low can be reached on (571)272-0951. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michele K. Joike/  
Examiner, Art Unit 1636

Michele K. Joike  
Examiner  
Art Unit 1636